Before The
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In The Matter Of	)	
Spectrum Needs of Emergency Response Providers	)	WT Docket No. 05-157

COMMENTS OF QUALCOMM INCORPORATED

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Dated: April 28, 2005

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QUALCOMM Incorporated ("QUALCOMM"), pursuant to Public Notice, FCC 05-80, released March 29, 2005, ("the Public Notice"), hereby submits its Comments as requested by the Commission for the report mandated by the Intelligence Reform and Terrorism Prevention Act of 2004, Pub. L. 105-458, 118 Stat. 3638 (2004) (the "Intelligence Reform Act").

QUALCOMM makes three main points in these Comments: 1) Congress and the FCC should not reallocate any additional spectrum at 700 MHz for public safety over and above the 24 MHz already allocated under current law because there is no indication that the 24 MHz is insufficient for public safety, and there is every indication that licensed commercial wireless networks and operators continue to need additional spectrum to meet the burgeoning demand for commercial wireless voice and data services; 2) instead of reallocating any of the 700 MHz spectrum, Congress and the FCC should expedite the clearing of all the 700 MHz spectrum already allocated both for public safety and commercial wireless by enacting and implementing a hard date of December 31, 2006 for the end of the DTV transition, thereby clearing the entirety of the spectrum on Channels 52 to 69; and, 3) there are commercial wireless technologies, some now available and others under development, that could benefit emergency responders, including

the Assisted GPS technology that QUALCOMM developed and that is incorporated in the chips inside the cell phones sold by Verizon Wireless, Sprint PCS, and others, which deliver highly precise and accurate E911 service to enable emergency responders to locate persons who use cell phones to call 911 during emergencies, and other location-based services, which will enable emergency responders to download maps and other location information into their phones.

I. Congress and the FCC Should Not Reallocate Any Additional 700 MHz Spectrum for Public Safety Over and Above the 24 MHz of Spectrum in That Band Already Allocated for Public Safety Under Current Law

The Commission's Public Notice asks for comment on "whether or not Congress should provide an additional allocation of spectrum in the 700 MHz band for emergency response provider communications." Public Notice at Pg. 2. QUALCOMM respectfully submits that the answer to this question is no. In the Balanced Budget Act of 1997, Congress mandated that by January 1, 1998, 24 MHz in the Upper 700 MHz band be allocated for public safety services. 47 U.S.C. Sec. 337 (a). The FCC has complied with this directive, not only making the allocation, but also completing a lengthy proceeding and establishing technical rules for the 24 MHz. Moreover, under the auspices of both the FCC and public safety representatives, an exhaustive planning process has been undertaken and completed for the use of this spectrum. For this process, the nation was divided into 55 regions, and a committee of public safety representatives has been established for each region. The 55 regional planning committees have prepared plans, which have been submitted to the Commission and made available for public comment.

Despite this exhaustive process, public safety entities have not yet been able to use the 24 MHz in the 700 MHz band because the DTV transition has not yet been completed. There is simply no basis for the Commission or Congress to conclude, with the 24 MHz at 700 MHz not yet in use, that public safety needs additional spectrum at all, much less in the 700 MHz band.

QUALCOMM wants our nation's emergency responders to have the communications tools that they need to do their jobs, but there is no indication that an additional allocation of spectrum in the 700 MHz band is warranted.

At the same time, the commercial wireless industry continues to grow at an exponential pace. Whether one looks the number of subscribers, minutes of use, data downloads, or any other metric, demand for licensed commercial wireless services continues to explode, and this means that the commercial wireless carriers continue to need additional licensed spectrum to deliver the services that Americans are demanding in record numbers. And, it is critical to note that all Americans, including emergency responders, enjoy the panoply of commercial wireless services available today, including services such as E911 enabled by Assisted GPS, a service that enhances the public's safety and assists emergency responders in doing their jobs by delivering highly precise and accurate location information as callers dial 911 from their cell phones.

In the Balanced Budget Act of 1997, Congress mandated that at the end of the DTV transition, the recaptured broadcast spectrum within Channels 52 to 69, except for the aforementioned 24 MHz, be auctioned. 47 U.S.C. Secs. 309 (j) (14), 337. The Commission has completed lengthy proceedings to establish band plans for both the Lower and the Upper 700 MHz Bands and has auctioned off the initial 18 MHz. Congress should not change course, and this spectrum should be used by licensed commercial wireless operators as current law provides.

Spectrum in the 700 MHz band is a very valuable public resource. The superior propagation in this band makes it ideal for wireless deployment. Current law strikes the right balance in dedicating 24 MHz of this spectrum for public safety and the rest for licensed commercial wireless. Congress should not change these allocations.

II. Congress and the FCC Should Expedite the Clearing of All the 700 MHz Spectrum as Allocated Between Public Safety and Commercial Wireless Under Current Law by Establishing a Hard Date of December 31, 2006 for the End of the DTV Transition to Clear the Entire 700 MHz Band

Rather than changing the allocation of the 700 MHz spectrum, QUALCOMM believes that Congress and the FCC should focus their attention on ending the DTV transition as soon as possible so that the spectrum can be used under the allocations already established under current law. QUALCOMM and a host of other companies and organizations, including CTIA, TIA, and the 700 MHz Advancement Coalition, believe that the DTV transition should end on December 31, 2006, and this date should apply to the entirety of Channels 52 to 69. It would not be feasible or wise to establish a hard date only for the 24 MHz allocated for public safety. Rather, there should be one hard date applicable to all the channels.

There is no doubt that the DTV transition has been an enormous undertaking, but it has gone on long enough. In 1987, some 18 years ago, the Commission issued its first inquiry into what was then called "advanced television services." See Notice of Inquiry, 2 FCC Rcd 5127 (1987). In the 18 years that followed, while the DTV standard was debated and adopted, while a Table of Allotments was issued, and over 1,400 TV stations across the country built and began operating DTV facilities, while Congress passed legislation in 1997 with a soft date for the end of the DTV transition, the nation changed dramatically. 170 million Americans purchased wireless phones and came to rely on them for their daily communications needs. Digital wireless technology, both 2G and 3G was developed and refined by QUALCOMM and others. National wireless networks were built and even consolidated. The internet was born. Wireless broadband technologies invented by QUALCOMM and others were deployed and proliferated.

In light of these fundamental changes in American life, the time has come to clear this spectrum and end the DTV transition by December 31, 2006. This is the position of TIA, CTIA,

and the 700 MHz Advancement Coalition, as well as a large number of companies in the wireless, telecommunications, and high tech industries. In addition, there is a new coalition of companies and associations in these industries by the name of the High Tech DTV Coalition, who all agree on the need for Congress to set an early date certain for the end of the DTV transition.[1] QUALCOMM appreciates the complexity of the DTV transition and understands that there are a number of serious issues that need to be resolved to enact legislation with a hard date of December 31, 2006. But, these issues can and must be worked out, and the Commission should work with Congress to do so.

It would not be feasible or wise for Congress to mandate a hard date for the DTV transition for only the channels to be reallocated to public safety or only the channels in the Upper 700 MHz Band. Moving the TV and DTV stations now on Channels 52 to 69 to Channels 2 to 51 is a complex, interrelated process. The FCC has set up the channel selection process, which will entail in some cases a daisy chain as one station's election affects another and on and on. This process cannot work if Congress were to single out only some of the channels for the hard date—TV or DTV stations will have to move, but they will not have anywhere to go.

Moreover, it would be fundamentally unfair and unwise if Congress were to set a hard date for some but not all of the channels or different hard dates for different channels. Both public safety organizations and licensed commercial wireless operators need the spectrum at 700 MHz. Indeed, QUALCOMM has purchased licenses for Channel 55 covering the entire nation and has developed an exciting new service for the spectrum, known as MediaFLO, that can bring

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[1] The High Tech DTV Coalition is comprised of the following companies and associations: Alcatel, Aloha Partners, AT&T, Dell, Cisco Systems, IBM, Intel, Microsoft, Texas Instruments, T-Mobile, Information Technology Industry Council, National Association of Manufacturers, Business Software Alliance, the Semiconductor Industry Association, Rural Telecommunications Group, the National Telecommunications Cooperative Association, and QUALCOMM.

substantial benefits to the public. Congress should not pick and choose between uses of the 700 MHz spectrum after the DTV transition; rather, Congress should set one date to end the transition for all the spectrum, and that date should be December 31, 2006.

III. There Are Commercial Wireless Technologies That Can Benefit Emergency Responders in Countless Ways

Rather than wait for allocations of new dedicated spectrum, emergency responders can benefit from using commercial wireless technologies on spectrum allocated long ago. QUALCOMM has developed core technology known as code division multiple access ("CDMA"), which has been incorporated into standardized wireless technologies deployed by wireless carriers in the United States and around the world, including cdmaOne, the second generation ("2G") version of CDMA, and CDMA2000 and Wideband CDMA ("WCDMA," also known as "UMTS"), the third generation ("3G") versions of CDMA.

The CDMA2000 technologies include 1xEV-DO, the first version of which, 1xEV-DO Release O, enables wireless downloads over licensed spectrum at average rates of hundreds of kilobits per second and peak rates of 2.4 megabits per second. Verizon Wireless has deployed 1xEV-DO in 30 markets across the country, covering over 75 million people, and now sells three phone models and one PDA with EV-DO technology, with more to come. They sell three EV-DO cards, which laptop users plug into laptop card slots to allow them to use EV-DO. Two of these card models, employ receive diversity, which supports even faster data speeds. By the end of this year, Verizon Wireless will have EV-DO in markets covering more than 150 million people. ALLTEL has also launched EV-DO in Cleveland, Tampa, and Akron and is selling a laptop card model which incorporates receive diversity. Sprint PCS is in the midst of its deployment of EV-DO. This year, as a stand-alone company, Sprint had planned to deploy EV-DO in at least 39 major markets covering 129 million people. See Public Interest Statement of

Sprint & Nextel (filed Feb. 8, 2005), Docket No. 05-63 at Pg. 26. The following year, Sprint would have extended EV-DO to a majority of its markets. Id. In their Public Interest Statement filed by Sprint and Nextel in support of their merger, Sprint and Nextel stated that the merged company will deploy the upgraded version of 1xEV-DO known as 1xEV-DO Revision A ("DOrA") beginning in late 2006 or early 2007. Id. at Pg. 4. Finally, Cingular has already deployed WCDMA in six markets, which permits downloads at peak rates of 384 megabits per second, and is now deploying high speed downlink packet access ("HSDPA"), which permits even faster downloads and uploads, as well as WCDMA, in markets around the country.

These technologies enable commercial carriers to deliver ubiquitous, advanced, high speed wireless broadband services over their licensed PCS and cellular spectrum. Emergency responders can use these interoperable networks for critical information sharing. Already, entities such as the Automated Regional Justice System ("ARJIS"), in San Diego, CA, are enabling police to use PDAs with EV-DO to access a myriad of information sources at the federal, state, and local level.

In addition, commercial wireless technologies enable the delivery of multimedia content to mobile phones over licensed spectrum. More and more information used by emergency responders is in the form of multimedia, such as photos and video feeds. These technologies enable delivery of such content on a one-to-one (so-called unicasting) or a one-to-many (multicasting) basis over wireless networks also used for voice and data service via 3G CDMA.

QUALCOMM has invented EV-DO Gold Multicast and EV-DO Platinum Multicast. Gold Multicast is a software upgrade to EV-DO Release O networks that allows operators to provide several streams of video on a one-to-many basis, either live or sent to phones at times of day when the network is not heavily used. Gold Multicast is included in the base software for

DOrA. Recently, QUALCOMM announced that it has begun shipping samples of chips for phones with DOrA, including support for Gold Multicast. In March 2005, QUALCOMM demonstrated EV-DO Platinum, a software enhancement for DOrA networks. Platinum achieves more than three times the capacity of EV-DO Gold, which translates into additional content streams or higher resolution content with the same number of streams.

Although unicast and multicast technologies allow CDMA operators to deliver video content over EV-DO networks, these networks are not dedicated to video and must use the same capacity used for voice and data services. This inherently limits the capacity available for video content, including the number of live streams or clips that can be transmitted.

As a result, QUALCOMM invented a multicasting technology to be used in dedicated spectrum known as FLO—forward link only. FLO optimizes a network dedicated solely to the one-way transmission of multimedia content, a network that will not take capacity away from existing wireless networks. QUALCOMM designed FLO for the Lower 700 MHz band. The combination of the superior propagation available at 700 MHz and the favorable power limits for the band mean that just a few towers can cover large areas, reducing capital and operating costs.

QUALCOMM has announced that it is launching a nationwide network on licensed 700 MHz spectrum, Channel 55, to deliver multimedia content (video, audio, and data) to third generation mobile phones over FLO. This new service, known as MediaFLO, has the potential to bring tremendous benefits to the public at large and to emergency responders by allowing them to have access to large quantities of multimedia content on off the shelf wireless devices, without affecting the capacity of the existing commercial wireless networks.

In the arena of push-to-talk technology, another key capability for emergency responders, in explaining their decision to deploy DOrA beginning in late 2006 or early 2007, Sprint and

Nextel noted that DOrA "supports exceptional call set up times, provides excellent service quality, and can be deployed to a market in a competitive time frame" and "has ideal characteristics as a platform for a high performance push to talk feature over CDMA," which the merged company will deploy. Public Interest Statement at Pg. 26. This high performance push-to-talk capability allows for inherently interoperable transmission of voice and data to large numbers of dynamically assignable talk groups.

Emergency responders can also take advantage of the constant improvements in the capabilities of chips made for mobile phones. QUALCOMM's most advanced chips will incorporate a "convergence platform" which includes capabilities for advanced 3D graphics, enhanced sound, up to 6 megapixel cameras, high resolution video capability (30 frames per second), and VGA displays. QUALCOMM is also developing breakthrough display technology that will enable phones to have screens with bright, reflective displays that will be visible in full sunlight with a significant reduction in power consumption from today's displays.

Emergency response providers can take advantage of all these exciting developments in 3G CDMA and leverage the commercial networks, handsets and services to maintain lock-step with technology advances. Obsolete, non-interoperable, stove pipe systems can become a thing of the past if emergency response providers migrate to 3G CDMA-based cellular technologies. Interoperability with the older legacy systems is entirely possible using gateways between cellular and land mobile radio systems.

Finally, there are products that have been developed for use by the US Government on cellular and PCS networks at the federal, state, and local levels. One such example is the QSec-2700 cellular phone, which is capable of encrypting voice and data up to and including the Top Secret classification level. The US Government commissioned the research and development of

the QSec-2700 and now benefits from its nationwide use over the Verizon Wireless network. Other CDMA cellular carriers, such as Sprint, can provision the device on their networks as well, and it inherently allows for secure, interoperable information exchange. Where cellular coverage does not exist, portable cellular infrastructure in vehicles or transit cases can be used in conjunction with business arrangements with the licensed spectrum holders.

IV. Conclusion

QUALCOMM appreciates the opportunity to present these Comments to the Commission for its use in preparing the report to Congress required by the Intelligence Reform Act and would be pleased to work with the Commission, Congress, and emergency responders to improve public safety communications as discussed herein.

Respectfully submitted,

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